CHEMICAL-
BIOLOGICAL
WARFARE

A KILLING SHAME

U.S. gas and germ weapons violate treaties. Accidents could wipe out millions.

BY GERALD ASTOR LOOK SENIOR EDITOR

"IT IS A well-known principle," said Harvard Medical School Professor Victor W. Sidel, "in the use of dangerous materials that anything that can go wrong will eventually go wrong if the materials are used often enough, despite the most elaborate safety precautions." Dr. Sidel made the remark this past spring before a House of Representatives subcommittee pondering the dangers of open-air tests of lethal chemicals. The U.S. program of research, development and application of chemical and biological warfare (CBW) proves Dr. Sidel's principle.

A section on a map of the Army's Dugway Proving Grounds, 80 miles from Salt Lake City, bears the label "permanent biocontaminated." There's been no public explanation of what microorganism contaminates the site. It was in the Dugway area that biological testing introduced Venezuelan equine encephalitis (VEE), a disease formerly confined in the U.S. to Louisiana and Florida. Defense Department officials suggest VEE could have been carried by migratory birds, but it would be peculiar, if not incredible, for the birds to fly from Florida or Louisiana and not stop to contaminate any place until they reached the Utah testing site.

Dugway was the locale of a spectacular accident in March, 1968. Nerve gas sprayed from an airplane drifted 45 miles off target and killed 6,400 sheep in Skull Valley. Only rain and evening snow that brought the killing cloud to earth prevented the gas from floating over heavily traveled Highway 40. A wind shift could have blown the gas to Salt Lake City. Dugway experts reported all danger had passed four days after the accident. But scientists who tested the forage 23 days later discovered the residues of nerve gas still killed sheep.

When the animals had first begun to fall into death agonies, an Army spokesman denied that "any biological agents" had been tested; at best a half-truth, since nerve gas classifies as a chemical. If the Army had been candid, veterinarians could have saved most of the sheep.

Calves are still being poisoned near Dugway. Again we hear that no open-air tests of either nerve gas or biological agents are being made. But a local vet diagnoses the more recent livestock deaths as caused by botulinum toxin, a poisonous product of bacteria that falls between chemical and biological classification.

Another potential germ weapon, anthrax, attacks both humans and animals. A soil-borne spore, it survives six minutes of boiling in water. World War II tests of anthrax by the British have left the island of Gruinard uninhabitable for perhaps a century. "We had anthrax outbreaks in this area 15 or 16 years ago," says a Utah veterinarian. "Where it came from, nobody seems to know." The implication is that anthrax was an earlier export of Dugway. "We have a lot of dust in this dry area. When the weather fronts move through, that dust goes over Salt Lake City."

The Anniston, Ala., arsenal stores defective M-55 nerve-gas rockets encased in cement and steel jackets to keep the gas from leaking. A worker at Anniston wrote to Rep. Richard McCarthy (a Buffalo, N.Y., Democrat) and complained, "We have to work in the toxic area. . . . There are leakers in this area and we do not know where they are. . . . This agent is deadly. . . . It is possible for us to even carry contamination to other people, even our family at home. . . ."

In July of this year, on Okinawa, 23 soldiers and a civilian employee who were removing paint from nerve-gas rockets suffered symptoms of nerve-gas poisoning—dizziness and blurred vision. Technicians discovered a leak by a fill plug. All of those affected recovered after a few hours of treatment. Okinawans, whose island is governed by the U.S. as a World War II prize, knew nothing of the lethal materials stored there. Similarly, West Germans learned this year that the U.S. Army had cached lethal chemicals on their territory, and Hawaiians heard that open-air tests of nerve gas occurred on one of their islands.

During the 1950's, contaminated waste from

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the Rocky Mountain Arsenal production of nerve gas was dumped into ponds. Experts believed evaporation would render the stuff harmless, but it fed into nearby streams, killed livestock and destroyed crops. Rocky Mountain Arsenal chiefs then drilled a well more than two miles deep and, in 1962, began pumping waste into the hole. Less than a month after they started this method of disposal, seismographs in the area recorded quakes that rose in severity as the pumping increased pressure. By 1966, this practice was also discontinued. Cement-lined reservoirs to hold waste were eventually constructed. The real solution, however, was the decision in the late 1950's to halt production of nerve gas at the Arsenal.

MEANWHILE, THE ARMY stored above ground at the Arsenal its lethal inventory in steel tanks or 1,000-lb. bomb clusters, each of which bore 76 bomblets loaded with GB, a now obsolete nerve gas. The depot abuts Stapleton International Airport, the airfield for the city of Denver, seven miles away. Colorado scientists noted that any aircraft that might undershoot Stapleton's runways or crash on takeoff could detonate enough poison gas to wipe out Denver's 500,000 citizens. Arsenal officials agreed to remove the deadly materials, but under the present plans it will be early 1971 before Denver can uncross its fingers.

Few Americans paid much attention to the Skull Valley sheep-kill until nearly a year later, when an NBC-TV show, *First Tuesday*, ran films of writhing animals, along with studies of the psychological effects of hallucinogenic gas upon rodents, and the ecological destruction of Gruinard. Among the viewers were McCarthy, the upstate New York congressman, his wife Gail and their five children, who range from 6 to 11.

A former newspaperman, McCarthy remembers his reaction: "We realized we were watching kind of a horror show. My wife shooed the kids away. Gail said, 'You're a congressman, what do you know about this?' 'Nothing,' I had to answer. Literally, factually nothing. I realized that I must have voted money for this sort of thing. Some of it must have been buried." Estimates on CBW costs run from $330 million to $700 million, but even the Pentagon cannot give precise figures that cover all services and special ordnance.

McCarthy negotiated a briefing from the Pentagon. "They wanted a totally secret conference. I insisted on a partly unclassified briefing to deal with policy questions, akin to questions asked in the nuclear field—types of delivery, what we spend, tactical strategy, safety. I wasn't asking for formulas, the things that obviously have to be classified." Hacking through the Pentagon underbrush, McCarthy fired off questions on our CBW policy to Secretary of State William Rogers, UN Ambassador Charles Yost, Presidential Assistant Henry Kissinger and Secretary of Defense Melvin Laird. Their answers contradicted each other.

While mulling over their replies, McCarthy received a call informing him that the Defense Department was preparing to ship 800 railroad cars of poison gas from both the Rocky Mountain Arsenal and Anniston, Ala., to New Jersey, where the gas containers would be taken out to sea and sunk aboard obsolete cargo ships. The operation was known as CHASE, an acronym coined from the naval procedure for disposing of unwanted ships, "Cut Holes And Sink 'Em."

The Congressman telephoned Dr. Matthew Meselson, a Harvard biologist who had served as a consultant to the Arms Control and Disarmament Agency since 1963. "First, McCarthy told me that he heard some obsolete gas was to be shipped across the country," remembers Meselson. "I told him to find out what the agent was. Then he called back and said it wasn't World War II stuff only but nerve gas as well. This sounded a little worse to me, but I wasn't that concerned. I asked McCarthy to find out what form it was going to be shipped in. He thought it was big tanks or cylinders. Well, that wasn't necessarily that dangerous. But then he called back to say it was in bomb clusters with bomblets [M-34 Air Force nerve-gas bombs]. The fuses would be removed, but the explosive charges around the gas would remain. A fire could have set off everything."

> The Pentagon quietly moved leaky nerve-gas rockets through the crowded Northeast Corridor

What *did* explode was congressional anxiety over the vision of nerve-gas bombs exploding in highly populated areas along the railroad right-of-way. The legislators held hearings and pointed to the large number of recent railroad accidents. The congressmen listened to witnesses, some of whom said that normal safety precautions had been waived on request of the Army and that flatcars were loaded and ready to roll. Public-health officials had received no instructions on the special medical treatment nerve-gas victims might require. While debate raged, a boxcar loaded with conventional 40mm shells caught fire 40 miles from Los Angeles and laid down a barrage over Antelope Valley. No one was injured, largely because the area is sparsely populated, but the accident underscored the potential catastrophe in shipping the much more dangerous gas through Indianapolis, Dayton, Philadelphia and other heavily populated cities, on the way to Earle, N. J.

EVENTUALLY A scientific committee studied other means of disposal. Within a few weeks, it recommended cheaper, less dangerous methods and provided for detoxification on the site at Rocky Mountain Arsenal.

Citizens along the route of the planned operation relaxed, while their congressmen basked in self-esteem at their success in protecting their constituents. Most of them either did not know, or failed to mention, that parts of operation CHASE had already been accomplished. Trains had already bumped 1,706 "coffins" of M-55 rockets with GB from Anniston to Earle, N. J., where the stuff was loaded on World War II Liberty ships, along with 4,577 tons of mustard gas and other contaminated containers. The ships were scuttled beyond the continental shelf.

A collision, derailment or a simple hotbox could have turned the trains with the M-55's into mass killers. With railroad accidents doubling over the past six years, this was not a remote possibility. For that matter, even the ship-sinking entailed perils. On at least one previous occasion, a scuttled vessel stuffed with conventional ammunition had blown up as it slid beneath the surface. And in another instance, a loaded ship, destined to be sunk, broke free of its tow and wallowed aimlessly at sea for hours, an undirected floating bomb.

Scientists still fret over the chemicals consigned to the sea—a breach of UN antipollution resolutions. No one can be certain the gases will remain harmless. Supposedly, sea water will neutralize nerve gas long before it can reach the surface. Temperatures at extreme depths should freeze the mustard gas, turning it into "giant candy sticks," in the words of one expert. What will happen to marine life that descends to the level of the chemical junkyard still remains conjecture.

And still awaiting destruction at Anniston are more of those cement- and steel-enveloped M-55's, whose leakage troubled the worker so much that he wrote McCarthy. The Committee that found an alternative to CHASE offered no solution for disarming the M-55's.

To date, nobody has used nerve gas, but the U.S. has employed huge quantities of nonlethal gases in Vietnam and Laos. The original rationale for using CS, an eye-stinging, stomach-wrenching, often powdered, persistent version of tear gas, is that when used in villages and bunkers where enemy troops hold innocent people hostage, the fumes drive everyone into the open and allow the civilians to escape from the line of fire. However, a confidential Pentagon report totally dismisses CS as a technique for saving civilians.

CS poured into caves and underground tunnels forces Vietcong soldiers out to where they can be shot or bombed. Artillery shells and aerial bombs loaded with CS have been lobbed onto VC positions to soften up the enemy for an attack. Some Army officers have even urged use of nerve gas as more logical, more effective.

Defoliants, the other form of nonlethal gas employed in the Far East, destroy vegetation. Their purpose is to make trails visible from the air and to ruin food in areas under VC control. In a typical military mistake, a defoliant (or "plant growth regulator" in Pentagonese) in Laos completely destroyed the economy of a valley that had only been recently won over to our side.

A treaty negotiated in Washington in 1922 and a protocol created at Geneva in 1925 both outlawed, on a first-use basis, gas and biological warfare. U.S. representatives helped write both agreements. Arguments on submarines sank the 1922 agreement. The Senate never ratified the Geneva Protocol.

Some 60 nations of every political stripe have accepted the Protocol, but in 1960 the U.S. State Department flatly advised against ratification, and Army manuals still remind troops that no international agreement binds them against using poison gas. The authors of the Protocol firmly deny that they intended to exclude tear gas from their prohibition. But in 1966, a U.S. delegate to the UN, Mr. James Nabrit, told the General Assembly, "The Geneva Protocol . . . does not apply to all gases. It would be unreasonable to contend that any rule of international law prohibits the use in combat against an enemy for humanitarian purposes of agents that governments around the world commonly use to control riots by their own people." Riot control, however, does not call for flushing the enemy out of caves in a humane manner in order to bomb them to death with B-52's.

McCarthy and 98 other congressmen requested President Nixon to resubmit to the Senate the Geneva Protocol. "It is the one international agreement on limiting arms," says McCarthy,

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Are biological weapons really essential for U.S. defense?

"that most nations have lived up to, with minor exceptions [Italy in Ethiopia, the Japanese in China, Egypt in Yemen, and the U.S. in Vietnam]. It's a building block toward disarmament."

Independent scientists like Dr. Ivan Bennett of New York University, who served on a UN committee that studied CBW, and Professor Meselson believe a case can be made for retention of poison gas as a deterrent against an enemy that might think in terms of a first strike. But they reject further efforts in biological warfare. "I can see no scenario in which one would use biological weapons," says Bennett. "I think we could renounce them without any danger to our security. I don't think biological warfare is the best deterrent, even if someone were to use it against us. We have more effective deterrents."

This thesis rests on the knowledge that any biological attack would require several weeks before it would have any effect. Against a major power, with good public-health facilities and sanitation, the epidemic effects would be limited. It would be almost impossible for a nation to know who had attacked it with microorganisms or indeed if there had even been an attack.

BECAUSE ALMOST NO ONE, except for the scientists at Fort Detrick, Md., who brew the bugs, sees a use for biological warfare at this point, Secretary of Defense Melvin Laird recently suggested to the National Security Council that production of biological weapons halt. Since the actual manufacture of such items has been insignificant, Laird's memo may not affect the policy on research.

Dan Crozier, a spiky-white-haired Norman Rockwell doctor, runs the Medical Research Institute unit at Fort Detrick. He insists the work is all defensive—studies of how to protect U.S. troops and civilians against a biological attack. Research at Detrick created vaccines against botulinum toxin, VEE and tularemia. Because these diseases are so rare in the U.S., commercial drug houses won't manufacture the vaccines. It's difficult, however, to justify biological-warfare research on the basis of a few instances of serendipity. If profit-motivated pharmaceutical companies cannot invest in research on such vaccines, then the job more properly might belong to the U.S. Public Health Service than the Pentagon, where the possibility that such research might be converted into offensive weapons will always be suspected. For example, Congressman McCarthy, in his new book, *The Ultimate Folly*, questions shared research between the Pentagon and the Department of Agriculture's hoof-and-mouth disease project on Plum Island, off Long Island. Robert Smith of the New York *Times* discovered that the Pine Bluff (Ark.) Arsenal has manufactured and stored 20,000 poison bullets containing botulinum toxin. And while Colonel Crozier's staff tests vaccines on human volunteers, another Detrick scientist remarks, "None of us like war, whether waged with bullets or bacteria. The view of war as inhuman does not depend upon the specific technology involved. It makes no difference whether you are killed by a bullet or bacteria."

But if war is ever to be renounced, it could make a difference to start with the one distinction to which most nations, except the U.S., have agreed: that chemical and biological warfare should be eliminated from the world arsenal. If we start there, perhaps we could also lower the nuclear voices that now threaten the world and then even move on to the less horrifying, but still deadly, conventional killers.

END